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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,944	12/04/2001	Eric Aubay	RN99013	9844
	7590 04/22/2004		EXAMINER BOYER, CHARLES I	
John Daniel Wood RhodiaINc 259 Prospect Plains Road CN 7500 Cranbury, NJ 08512-7500			ART UNIT	PAPER NUMBER
			1751	
			DATE MAILED: 04/22/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

ML

Office Action Summary	Application No. 09/890,944	Applicant(s) AUBAY ET AL.	
	Examiner Charles I Boyer	Art Unit 1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-88 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-52, 63-77 and 88 is/are rejected.
- 7) ☒ Claim(s) 53-62 and 78-87 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/17/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 60 is objected to because of the following informalities: Claim 60 refers to a use. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 34-52, 63-77, and 88 are rejected under 35 U.S.C. 102(a) as being anticipated by Watanabe et al, US 5,853,866.

Watanabe et al teach multi-functional materials with a photocatalytic function (see abstract). Watanabe et al give a useful background on the state of the art as follows: TiO.sub.2, V.sub.2 O.sub.5, ZnO, WO.sub.3, etc. have heretofore been known as substances which, when irradiated by ultraviolet radiation, cause oxygen molecules to be adsorbed to or desorbed from an organic compound such as a smelly constituent for

Art Unit: 1751

promoting decomposition (oxidation) of the organic compound. Since particles of TiO.sub.2 whose crystallized form is anatase, in particular, are highly effective for use as a photocatalyst, it has been proposed to form a photocatalytic layer of TiO.sub.2 particles on the surface of walls, tiles, glass (mirror), circulatory filter units, or sanitary ware.

5

According to a known processes of forming a photocatalytic layer, photocatalytic particles are kneaded with a binder and coated on the surface of a base by spray coating or dip coating, and thereafter heated (see Japanese laid-open patent publication No. 5-201747). (taken from col. 1, lines 1-50).

It appears then, that a process of disinfecting a surface using titanium dioxide is well known in the art. Note that the processes of coating materials with titanium dioxide may employ ethanol (col. 59, example 35) and the particle size of the titanium dioxide is 10 nanometers (col. 36, example 20).

An example of such a process follows: A liquid substance produced by adding water to titanium tetrachloride in a cold bath was processed at 140.degree. C. in an autoclave according to the hydrothermal process, producing a sol of anatase titanium oxide. The produced sol of anatase titanium oxide was dispersed in nitric acid. The dispersion had a pH of 0.8. To the dispersion, there was added an aqueous solution of 3 to 5 wt % of copper sulfate whose pH had been adjusted to about 0.8 by nitric acid. The solution was irradiated with light containing ultraviolet rays from above the container for 15 minutes by a light source comprising a 4W BLB lamp which was spaced about 10 cm from the solution. A dispersant of organic acetate was added to the solution, stabilizing the sol. A mixed solution prepared by successively adding a diluent of propanol and a hardener to siloxane resin was coated on the surface of a square alumina base with each side 10 cm long, and dried at 100.degree. C. The assembly was then coated with a mixed solution prepared by successively adding 20 weight % of siloxane resin with respect to the amount of titanium oxide, propanol, and a hardener to the sol produced in the manner described above, and fired at 150.degree. C., producing a specimen. The produced specimen was measured for a deodorizing capability R.sub.30 (L) upon irradiation (col. 71, example 43). As this reference meets all material limitations of the claims at hand the reference is anticipatory. With respect to the pH of the composition, Watanabe et al teach that if a TiO.sub.2 sol is employed, then since TiO.sub.2 has an isoelectric point of pH 6.5 and hence is substantially neutral, it can easily be coated uniformly on the base in the form of an aqueous solution in which it is dispersed by an acid or alkali. If the base is of metal, then an alkaline dispersion is preferable from the standpoint of erosion resistance. The acid may be a sulfuric acid, a hydrochloric acid, an acetic acid, a phosphoric acid, an organic acid, or the like. The alkali may be ammonia, a hydroxide including an alkaline metal, or the like, but should preferably be ammonia as it will not produce a metal contaminant after being heated (col. 72, lines 39-56).

Art Unit: 1751

3. Claims 34-52, 63-77, and 88 are rejected under 35 U.S.C. 102(b) as being anticipated by Heller et al, US 5,616,532.

Heller et al teach photocatalyst-binder compositions (see abstract). An example of such a composition comprises 27% by weight of poly(methylsilsesquioxane) also known as octakis(trimethylsiloxy)silsesquioxane (Gelest, Inc., Tullytown, Pa.); 6% by weight titanium dioxide (Degussa P-25, Degussa Corporation, Charlotte, N.C.); and 67% by weight isopropanol.

73

After mixing, the composition was applied to a borosilicate glass slide by dipping the slide into the composition mixture and draining off excess fluid. The coated slide was dried at ambient temperature (approximately 20.degree. C.) permitting the isopropanol to evaporate for approximately two hours. When dry, the composition on the slide was translucent, and could not be removed from the glass surface by rubbing, could not be pulled off by applied cellophane tape (the "tape test") and could not be washed off with water (col. 14, example 1). Another example comprises 0.5% by weight aluminum oxide (Vista Dispal, Austin, Tex.), 0.5% by weight titanium dioxide (Degussa P-25), and 99% by weight water (col. 14, example 2). The photocatalytic coating in Example 2 was made hydrophobic by spraying onto the surface of the coating one of the following solutions: 0.1% Glassclad 6C (United Chemical Technologies) in isopropanol or 0.1% Glassclad 18 (United Chemical Technologies) in water. Glassclad 6C is a chlorine-terminated poly(dimethylsiloxane) and Glassclad 18 is a hydroxyl-terminated poly(dimethylsiloxane). Soda-lime glass was the substrate material for the photocatalytic coating. Note that the preferred particle size of the titanium dioxide is 1-50 nanometers (col. 8, lines 35-45). As this reference meets all material limitations of the claims at hand the reference is anticipatory. With respect to the pH of the composition, the examiner relies on the teaching of Watanabe et al above to show that these compositions must have a pH apart from neutral in order to be viable.

4. Claims 34, 35, 37-39, 41-44, 46, and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohmori et al, US 6,479,031.

Ohmori et al teach titanium dioxide thin films (see abstract). An example of such a thin film is formed as follows: Anatase-type titanium oxide particles having a primary particle size of 7 nm were dispersed in water with an ultrasonic wave dispersing device to an aqueous solution of titanium oxide having a concentration of titanium oxide of 2% by weight as in Example 9, during which hydrochloric acid as a coagulant was added to control the pH to 1, followed by carrying out the same procedures as in Example 9 to obtain an aqueous titanium oxide-dispersed sol. The sol was coated on a glass plate and dried at 100.degree. C. to form a transparent film (col. 11, comparative example 5). As

Art Unit: 1751

this reference meets all material limitations of the claims at hand the reference is anticipatory.

Allowable Subject Matter

5. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not appear to teach the process of the present claims with the specific polymers claimed in claims 53-60, and 78-85. Accordingly, claims 53-62 and 78-87 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References cited in the International Preliminary Examination report; FR 2,766,494 and FR 2,729,673, are cumulative to the references cited above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles I Boyer whose telephone number is 571 272 1311. The examiner can normally be reached on M-F 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571 272 1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1751

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script, reading "Charles I Boyer".

Charles I Boyer
Primary Examiner
Art Unit 1751